



Influencing Factors of Shared Decision Making between Doctors and Patients in Menopausal Hormone Therapy in Patients with Menopausal Syndrome

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Recommended Citation

ZHOU Y Y, GAO C,CUI P, et al. Influencing Factors of Shared Decision Making between Doctors and Patients in Menopausal Hormone Therapy in Patients with Menopausal Syndrome [J] . Chinese General Practice, 2023, 26 (33) : 4181-4186. DOI: 10.12114/j.issn.1007-9572.2023.0219.

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Influencing Factors of Shared Decision Making between Doctors and Patients in Menopausal Hormone Therapy in Patients with Menopausal Syndrome

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【Abstract】 **Background** Menopausal hormone therapy (MHT) can effectively relieve menopausal symptoms, but its treatment options are diverse, and it is essential to make treatment decisions meeting women's needs. However, the current investigation on the quality of shared decision making between doctors and patients (SDM) in menopausal hormone therapy needs to be supplemented. **Objective** To analyze the quality of SDM in MHT among menopausal syndrome patients and explore its influencing factors, so as to provide a theoretical basis for achieving quality clinical care for menopausal population. **Methods** A total of 101 patients with menopausal syndrome from Center for Gynecological Endocrinology and Reproduction in Peking Union Medical College Hospital from October 2022 to January 2023 were selected as study subjects. The study was conducted using the questionnaire method, which consisted of general demographic information, treatment-related information and SDM quality survey. The Chinese version of 9-items shared decision making questionnaire (SDM-Q-9) was used to assess the SDM quality of patients. Multiple linear regression analysis was used to explore the influencing factors of SDM quality in MHT among patients with menopausal syndrome. Multiple linear regression analysis was used to explore the influencing factors of the quality of SDM in MHT among patients with menopausal syndrome. **Results** The average score of SDM quality was 89.75. Patients with children, considered MHT to be very effective, with symptoms of hot flushes and sweating, insomnia and mood fluctuations, advised by doctors to receive MHT had better degree of participation in SDM ($P<0.05$). Multiple linear regression analysis showed that patients with children ($\beta=0.26, P=0.005$), hot flushes and sweating ($\beta=0.19, P=0.044$), insomnia ($\beta=0.23, P=0.017$) and recommendation by doctors ($\beta=0.21, P=0.025$) are influencing factors of SDM quality in MHT of patients with menopausal syndrome, which could explain 23.7% of the variation in SDM quality. **Conclusion** SDM quality is relatively good in MHT among menopausal syndrome patients. Patients with children, hot flashes and sweating, insomnia, and recommendation for use by doctors are influencing factors of SDM quality in MHT among menopausal

syndrome patients. Doctors should take the initiative to include patients in SDM, so that patients can realize that they are the principal leader of their health and make SDM consistent with their needs and values in conjunction with doctors.

【 Key words 】 Climacteric syndrome ; Decision making, shared ; Menopausal hormone therapy ; Postmenopausal hormone replacement therapy ; Surveys and questionnaires ; Root cause analysis

Menopausal syndrome encompasses a range of somato-psychological symptoms, including hot flashes, excessive sweating, and emotional irritability, resulting from hormonal changes during the transition from reproductive to post-reproductive years^[1]. These symptoms significantly impact the quality of life for perimenopausal and postmenopausal women and may elevate the risk of conditions such as Alzheimer's disease and cardiovascular disease in later life^[2-3]. In the Chinese Guidelines for Menopausal Management and Menopausal Hormone Therapy (2018) ^[4], the primary treatment recommended is menopausal hormone therapy (MHT), which can be tailored according to specific indications and patient preferences. Currently, the main clinical MHT regimens include estrogen-progestin sequential therapy, continuous combined estrogen-progestin therapy, and single progestin/estrogen supplementation therapy. The sequential regimen is suitable for postmenopausal women desiring menstrual bleeding, while the continuous regimen is preferable for those who wish to avoid bleeding. Research has demonstrated that the absolute benefits of MHT encompass symptom relief, enhanced quality of life for menopausal women^[5], management of issues associated with postmenopausal genitourinary atrophy^[6], and prevention of postmenopausal bone loss and osteoporosis^[7]. Given the numerous treatment options and the associated risks of breast cancer and cardiovascular disease linked to hormonal therapy^[8-9], adopting shared decision making (SDM) is essential in MHT. This approach necessitates physicians to explain available treatment alternatives and their pros and cons to patients, fostering a collaborative effort to make informed medical decisions that align with both research evidence and patient preferences^[10]. Studies have shown that implementing SDM can enhance patient adherence and ultimately lead to improved treatment outcomes^[11]. Currently, research in China predominantly focuses on the therapeutic use of medication for menopausal syndromes, with a need for further investigations related to SDM. In light of this, the present study aims to evaluate the current quality of SDM in MHT for menopausal syndrome patients and analyze the influencing factors, providing a theoretical foundation for delivering enhanced clinical care to menopausal populations.

1 Subjects and methods

1.1 Subjects Convenience sampling was employed to select menopausal syndrome patients from the Endocrinology and Reproductive Center of the Department of Gynecology at Peking Union Medical College Hospital between October 2022 and January 2023 as the study participants. Inclusion criteria were as follows: (1) in accordance with the 2011 Staging of Reproductive Aging (STRAW+10) criteria^[4], including perimenopausal individuals with irregular menstrual cycles with/without perimenopausal symptoms and postmenopausal individuals with ≥ 12 consecutive months without spontaneous menstruation; (2) those who had been undergoing hormonal treatment for ≥ 3 months; (3) women who voluntarily agreed to participate in the study and provided informed consent. Exclusion criteria included: (1) absence of spontaneous menstruation due to premature ovarian failure, primary amenorrhea, secondary amenorrhea, etc.; (2) history of hysterectomy; (3) inability to independently complete the questionnaire due to psychiatric disorders, cognitive impairments, or other conditions.

1.2 Research methods The study employed a questionnaire consisting of three sections: general demographic and sociological information, treatment-related details, and an assessment of the quality of shared decision-making between healthcare professionals and patients.

1.2.1 General Information and treatment-related information This section comprised a self-administered questionnaire covering general information, including age, marital status, reproductive status, co-habitation status, education level, employment status, per capita annual family income, and the method of medical reimbursement. Treatment-related information encompassed co-existing chronic diseases, the specific MHT program, duration of MHT, frequency of medical visits, subjective evaluation of the effectiveness of MHT, and willingness to continue treatment.

The scale drew from the Modified Kupperman Scale^[12], a well-established tool for assessing menopausal symptoms. Thirteen primary menopausal syndrome symptoms were derived from the scale, including hot flashes and excessive sweating, insomnia, mood fluctuations, depression and doubtfulness, vertigo, fatigue, osteoarthralgia, headache, palpitations, skin sensations (like ants crawling), urinary tract infections, menstrual disorders, and impaired sexual function. In addition to symptom assessment, psychosocial factors were introduced, such as preferences for continuing menstruation, concerns about being different from others, anxiety about aging, the desire for psychological comfort, sources of information (e.g., acquired through popular science media, doctor recommendations, or suggestions from close friends)^[13].

1.2.2 Assessment of shared decision-making quality (SDM) In this study, the quality of SDM was evaluated

using the Chinese version of the Shared Decision Making Questionnaire (9-Items Shared Decision Making Questionnaire, SDM-Q-9) [14]. This questionnaire comprises nine items, each rated on a scale from 0 to 5, ranging from "completely disagree" to "completely agree." The total score can range from 0 to 45. To standardize the score to a scale of 0-100, the raw score was multiplied by 20/9. Higher scores indicate better SDM quality. The Chinese version of the SDM-Q-9 exhibited strong internal consistency, with a Cronbach's alpha coefficient of 0.945. In this study, the retested Cronbach's alpha coefficient was 0.851, demonstrating its reliability for assessing the quality of SDM. The mean SDM quality score among menopausal syndrome patients receiving MHT in this study was 89.75, with a score range of 64.44-100.00. Item 9 received the highest score (4.63), while Item 1 had the lowest score (4.30), as presented in table 1.

Table 1 The score of shared decision making quality of patients

Item	Score range	Average score
1.My doctor made it clear that a decision had to be made	0~5	4.30
2.My doctor wanted to be clear about the exact ways in which I would be involved in decision-making	1~5	4.49
3.My doctor communicated the different treatment options available to me	2~5	4.47
4.My doctor explained exactly what the pros and cons of the different treatment options were.	1~5	4.49
5.My doctor has helped me to understand all relevant information	3~5	4.54
6.My doctor has asked me what treatment option I would most like to choose	2~5	4.49
7.My doctor and I have thoroughly weighed the different treatment options	2~5	4.48
8.The treatment plan was chosen jointly by my doctor and me	2~5	4.53
9.My doctor and I have agreed on the follow-up treatment arrangements	3~5	4.63
Total score	29~45	40.39
Standard score	64.44~100.00	89.75

1.3 Quality control Before the formal distribution of questionnaires, a preliminary survey was conducted to refine the questionnaire design. During the official survey, emphasis was placed on the reliability and validity of the questionnaires to ensure their suitability for the subjects. The research team assisted the participants in understanding the questionnaire content and addressed their inquiries during the official survey. The effectiveness of these explanations was assessed by verifying that participants could correctly interpret the meanings of the questions. To

eliminate any potential influence of physicians' presence on questionnaire completion, results of the questionnaires were provided to the doctors after participants had completed them. Furthermore, in order to minimize the potential impact of doctors on questionnaire completion, the researchers guided the research subjects to a separate room for the survey upon obtaining their consent. After questionnaire retrieval, the completed questionnaires were uniformly numbered, and data entry was carried out using Epidata software. A data entry and verification process was performed by a pair of individuals to ensure the accuracy and error-free entry of data.

1.4 Statistical analysis methods SPSS 26.0 software was employed for data analysis. Frequency and percentage were used to describe categorical data, while the measurement data, which were skewed, were described using median $M (P_{25}, P_{75})$. A rank sum test was employed for univariate analysis to compare the SDM quality scores across different levels of each factor. Multiple linear regression analysis was utilized to explore the influencing factors of SDM quality in MHT for menopausal syndrome patients. Statistical significance was considered at $P < 0.05$.

2 Results

2.1 General information A total of 109 questionnaires were collected, and 101 of them were deemed valid, resulting in a validity rate of 92.7%. Among the 101 menopausal syndrome patients, the majority fell within the age range of 50 to less than 60 years old (65.3%), had been on MHT for 2 to less than 5 years (30.7%), and were predominantly receiving the estrogen-progestogen sequential combination regimen (54.5%). Univariate analysis results indicated that there were statistically significant differences in SDM quality scores based on patients' reproductive status and their subjective assessment of MHT effectiveness ($P < 0.05$). Specifically, SDM quality scores were higher among patients with children and those reporting a very favorable subjective perception of MHT effectiveness, as presented in table 2.

Table 2 Comparison of the score of shared decision making quality of patients with different levels of ordinal data

Item	Cases (%)	SDM quality score [$M (P_{25}, P_{75})$, score]	Z (H) value	P value
Age			5.066 ^a	0.079
40~<50 years old	22 (21.8)	82.22 (75.56, 96.67)		
50~<60 years old	66 (65.3)	95.56 (82.22, 100.00)		
≥60 years old	13 (12.9)	84.44 (80.00, 100.00)		
Marital status			-1.664	0.096
Non-single	93 (92.1)	93.33 (80.00, 100.00)		

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Single	8 (7.9)	83.33 (80.00, 89.44)		
Maternity status			-2.704	0.007
Have children	92 (91.1)	94.44 (82.22, 100.00)		
No children	9 (8.9)	80.00 (80.00, 84.44)		
Living together condition			-1.637	0.102
Living alone	4 (4.0)	81.11 (80.00, 83.89)		
Living together	97 (96.0)	93.33 (80.00, 100.00)		
Educational level			3.205 ^a	0.361
Junior high school and below	1 (1.0)	82.22		
High school and junior college	6 (5.9)	100.00 (85.56, 100.00)		
College	20 (19.8)	93.33 (82.78, 100.00)		
Bachelor's degree and above	74 (73.3)	90.00 (80.00, 100.00)		
Employment status			-0.245	0.806
Employed	57 (56.4)	93.33 (80.00, 100.00)		
Unemployed/retired	44 (43.6)	88.89 (82.22, 100.00)		
Annual per capita household income			1.060 ^a	0.588
<30 000 yuan	2 (2.0)	82.22 (82.22, 82.22)		
30 000~80 000 yuan	23 (22.8)	93.33 (80.00, 100.00)		
>80 000 yuan	76 (75.2)	93.33 (80.56, 100.00)		
Medical reimbursement method			-0.249	0.803
Reimbursable	97 (96.0)	91.11 (80.00, 100.00)		
Unreimbursable	4 (4.0)	93.33 (83.33, 96.67)		
Combined chronic disease			-0.062	0.951
No	73 (72.3)	93.33 (81.11, 100.00)		
Yes	28 (27.7)	93.33 (80.00, 100.00)		
MHT program			0.397 ^a	0.820
Sequential estrogen-progestin program	42 (41.6)	93.33 (80.00, 100.00)		
Estrogen-progestin sequential regimen	55 (54.4)	91.11 (80.00, 100.00)		
Estrogen or progestin supplementation program alone	4 (4.0)	87.78 (81.11, 96.11)		
Years of MHT			1.945 ^a	0.584
3 months to <2 years	25 (24.8)	97.78 (82.22, 100.00)		

2 to <5 years	31 (30.7)	91.11 (80.00, 100.00)		
5 to <8years	15 (14.8)	82.22 (77.78, 100.00)		
8 to <10 years	18 (17.8)	86.67 (81.67, 98.33)		
≥10 years	12 (11.9)	97.78 (80.56, 100.00)		
Frequency			0.833 ^a	0.841
1 time/year	21 (20.8)	88.89 (80.00, 98.89)		
2 times/year	16 (15.8)	93.33 (82.22, 100.00)		
3 times/year	16 (15.8)	96.67 (80.00, 100.00)		
≥4 times/year	48 (47.5)	90.00 (80.56, 100.00)		
Subjective feeling of MHT effect			10.319 ^a	0.006
Very good	89 (88.1)	95.56 (82.22, 100.00)		
Fair	9 (8.9)	80.00 (78.89, 82.22)		
Unclear	3 (3.0)	84.44 (81.11, 85.56)		
Willingness to continue treatment			5.829 ^a	0.054
Very willing	75 (74.2)	93.33 (82.22, 100.00)		
Fair	3 (3.0)	77.78 (76.67, 78.89)		
Depends on doctor	23 (22.8)	86.67 (80.00, 100.00)		

Note: MHT = menopausal hormone therapy; ^a is the H value; due to numerical modification, the sum of the component ratios is not 100 percent. ratios do not sum to 100.0%.

2.2 Menopausal Symptoms Menopausal symptoms were mainly hot flashes and sweating (68.3%), followed by insomnia (52.5%) and osteoarthritis (32.7%). The results of univariate analysis showed that SD patients with or without hot flashes and excessive sweating, insomnia, mood swings insomnia, and mood swings were compared with the SDM quality scores of the patients, and the difference was statistically significant ($P < 0.05$), as shown in table 3.

Table 3 Comparison of the score of shared decision making quality in patients with and without menopausal symptoms

Symptom	Cases (%)	SDM quality score [M (P25, P75) , score]	Z value	P value
Hot flashes and excessive sweating	69 (68.3)	95.56 (82.22, 100.00)	-2.581	0.010

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Abnormal sensations	15 (14.9)	100.00 (84.44, 100.00)	-1.571	0.116
Insomnia	53 (52.5)	97.78 (83.33, 100.00)	-3.197	0.001
Mood swings	31 (30.7)	100.00 (88.89, 100.00)	-2.615	0.009
Depression, paranoia	24 (23.8)	94.44 (82.22, 100.00)	-1.097	0.273
Vertigo	13 (12.9)	97.78 (85.56, 100.00)	-1.156	0.248
Fatigue	20 (19.8)	86.67 (80.00, 100.00)	-1.006	0.314
Bone and joint pain	33 (32.7)	97.78 (80.00, 100.00)	-0.910	0.363
Headaches	10 (9.9)	100.00 (87.22, 100.00)	-1.917	0.055
Palpitations	25 (24.8)	93.33 (80.00, 100.00)	-0.310	0.757
Formication	4 (4.0)	100.00 (96.67, 100.00)	-1.904	0.057
Urinary tract infection	14 (13.9)	91.11 (83.33, 98.33)	-0.090	0.928
Menstrual disorders	22 (21.8)	96.67 (80.00, 100.00)	-0.261	0.794
Poor sex life	12 (11.9)	93.33 (77.22, 98.89)	-0.552	0.581

2.3 Psychosocial factors Doctor's recommendation (30.7%) was the first psychosocial factor for patients to choose hormone therapy, followed by fear of aging quickly (19.8%). The results of univariate analysis showed a statistically significant difference ($P<0.05$) in the comparison of SDM quality scores of patients with and without doctor's recommendation for use, as shown in table 4.

Table 4 Comparison of the score of shared decision making quality in patients with and without psychosocial factors

Factors	Cases (%)	SDM quality score [M (P25, P75) , score]	Z value	P value
Hoping to continue menstruation	17 (16.8)	93.33 (81.11, 100.00)	-0.334	0.738
Seeking psychological comfort	4 (4.0)	96.67 (93.33, 100.00)	-1.263	0.206
Popularized through the media	14 (13.9)	90.00 (81.67, 96.67)	-0.276	0.782
Recommended by doctors	31 (30.7)	97.78 (84.44, 100.00)	-2.047	0.041
Worried about aging quickly	20 (19.8)	97.78 (82.78, 100.00)	-1.385	0.166
Don't want to be different from others	3 (3.0)	82.22 (80.00, 91.11)	-0.491	0.624
Recommended by friends	9 (8.9)	84.44 (81.11, 100.00)	-0.110	0.913

2.4 Multiple linear regression analysis of factors affecting SDM quality in MHT of menopausal syndrome patients

The standardized score of SDM quality score (assignment: measured value) was used as the dependent variable, and the statistically significant differences in the univariate analysis were used to compare the factors of fertility status (assignment: having children = 1, not having children = 0), the MHT effect is subjectively perceived as good (assignment: yes = 1, no = 0), the MHT effect is subjectively perceived as fair (assignment: yes = 1, no = 0), hot flashes and excessive sweating (assignment: yes = 1, no = 0), insomnia (assignment: yes = 1, no = 0), mood swings (assignment: yes = 1, no = 0), and doctor's recommendation for use (assignment: yes = 1, no = 0) were analyzed as independent variables in a multivariate linear regression analysis, and the constructed model was statistically significant ($F=5.427, P<0.001$). The results of multiple linear regression analysis showed that having children ($\beta=0.26, P=0.005$), hot flashes and excessive sweating ($\beta=0.19, P=0.044$), insomnia ($\beta=0.23, P=0.017$), and the use of medical advice ($\beta=0.21, P=0.025$) were the influencing factors of SDM quality in the MHT in patients with menopausal syndromes, and they explained 23.7% of the variance in SDM quality, as shown in table 5.

Table 5 Multiple linear regression analysis of the influencing factors of shared decision making quality in MHT of menopausal syndrome patients

Variables	<i>B</i>	95% <i>CI</i>	SE	β	<i>t</i> value	<i>P</i> value
Constant	73.89	(62.71, 85.06)	5.63	—	13.13	<0.001
Has children	9.18	(2.77, 15.59)	3.23	0.26	2.84	0.005
Subjective feeling of MHT effect is good	1.25	(-9.70, 12.20)	5.51	0.04	0.23	0.821
Subjective feeling of MHT effect is fair	-4.35	(-16.38, 7.68)	6.06	-0.12	-0.72	0.474
Hot flashes and excessive sweating	4.16	(0.11, 8.21)	2.04	0.19	2.04	0.044
Insomnia	4.54	(0.84, 8.24)	1.86	0.23	2.44	0.017
Mood swings	0.67	(-3.45, 4.78)	2.07	0.03	0.32	0.748
Recommended by doctors	4.44	(0.58, 8.30)	1.94	0.21	2.28	0.025

3 Discussion

The quality of SDM in MHT for menopausal syndrome patients appears to be better in this study. It is essential for doctors to actively guide patients through the SDM process. The SDM quality score for MHT in menopausal syndrome patients in this study was 89.75, which is higher compared to scores of patients with coronary heart disease^[15] and breast cancer^[16]. This suggests that overall, menopausal syndrome patients have better SDM

participation. The reasons for this could be that menopausal syndrome, being a symptom group with a lower degree of criticality, reduces the psychological threshold for patients to seek medical advice. Additionally, the readily available information on MHT through public health campaigns enables patients to comfortably raise questions and express their needs to their doctors, resulting in a better overall medical experience.

Moreover, the increasing prevalence of menopause clinics^[17] allows professional gynecologic endocrinologists to establish trusting relationships with patients and consider patient preferences more, thus reducing decision-making conflicts. This is supported by the high score for item 9, indicating that most patients agree with the final decision-making results. However, the relatively lower score for item 1 suggests that physicians might have overlooked the information gap between doctors and patients when discussing treatment options. It appears that starting the conversation with various treatment options can make it challenging for some patients to engage in the SDM process and clarify their preferences. Therefore, doctors should inform patients about the need to make decisions regarding treatment, such as whether or not to undergo treatment, whether to use a regimen with or without menstruation, etc., to more effectively guide patients into the SDM process and facilitate meaningful communication.

Factors such as strong social support, expectations of symptom improvement, and effective communication with physicians contribute to increased patient engagement in SDM. The multiple linear regression results indicate that fertility status, hot flashes, and excessive sweating, insomnia, and physician recommendations all positively predict the quality of SDM for MHT in patients with menopausal syndromes. Fertility status might influence SDM quality because patients with children have a more robust social support system, and family members can better comprehend medical information, aiding patients in clarifying the problems they need to address and leading to more effective patient-doctor communication.

The study results also reveal that hot flashes and excessive sweating and insomnia were the two most commonly reported menopausal symptoms, which aligns with previous investigations^[18]. Patients with severe symptoms tend to exhibit better medication adherence^[19]. The pain and reduced quality of life caused by these symptoms make patients more attentive to potential improvements through treatment. This, in turn, encourages them to actively participate in the decision-making process. The increase in life expectancy has shifted people's focus from basic subsistence to a higher quality of life, with one-third of women's lives being spent after menopause. This higher prevalence of menopausal symptoms motivates patients to actively engage in the SDM process, absorb and understand the information provided by doctors, ask questions based on their specific situations, and ultimately make treatment decisions that meet their needs, often resulting in better medication adherence.

The Expert Consensus on Menopausal Women's Health Management^[20] emphasizes the importance of community management as part of comprehensive menopausal syndrome diagnosis and treatment. Diet, exercise, and health education can all contribute to personalized management, aligning with the shift toward lifestyle-focused care. This holistic approach, from personal discovery and diagnosis to community management, is vital for the benefit of patients.

The better quality of SDM when doctors recommend the use of MHT may be related to the fact that these patients are more likely to heed their doctor's advice, or it could be linked to some patients having a more doctor-centered perspective. Addressing the information gap between doctors and patients is one of the barriers to effective doctor-patient communication. Patients with limited medical knowledge may struggle to comprehend specialized terminology and the associated risks of various medications. Doctors can bridge this gap by using plain language, reiterating patients' questions when necessary, and clarifying patients' preferences to facilitate effective communication. Additionally, survey results indicate that some patients decide to use medication out of fear of aging, a desire to continue menstruation, or information obtained through popular science media. To enhance the quality of life, increasing public awareness of menopausal health care and improving health literacy can empower menopausal syndrome patients to understand their own condition better^[21] and seek medical help for symptom relief.

In conclusion, the quality of SDM in MHT for menopausal syndrome patients appears to be better. Influencing factors include fertility status, the presence of hot flashes and excessive sweating, insomnia, and physician recommendations. However, this study had a small sample size and was conducted in a single hospital department. Future research should consider expanding the scope of the survey to yield more comprehensive insights. As the medical model continues to evolve, the concept of "patient-centered" medical care is becoming increasingly significant, with patients taking on a more active role in their healthcare decisions^[22]. In MHT, physicians should actively involve patients in the SDM process, enabling them to understand that they are the primary individuals responsible for their health and encouraging their active participation in clinical decision-making.

Authors' contributions: Zhou Yuyu proposed the main study objectives, was responsible for the conception and design of the study, implementation of the study, and writing the paper; Gao Chuan and Cui Pu'an revised the paper; Wang Yaping supervised the data collection and processing; He Zhong was responsible for the quality control and review of the article, and was responsible for the article as a whole and supervised the management.

There is no conflict of interest in this article.

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